THE DIFFUSION OF HR PRACTICES IN CHINESE WORKPLACES AND ORGANIZATIONAL OUTCOMES

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How relevant are human resource (HR) practices in economies undergoing significant economic transition from a command to a market-based system? Using data drawn from a large sample of Chinese establishments, the authors investigate the spread of a range of Western-style HR practices in China and estimate the relationship between the adoption of these practices and three organizational outcomes: sales per employee, total labor costs, and unit labor costs. They find a mixed result for the relationships between labor management practices and establishment productivity. While the introduction of a number of HR practices was also associated with significantly higher labor costs, the results indicate a more mixed result for the relationship between these practices and unit labor costs. Their findings further the understanding of the relationship between work practices and organizational outcomes, and they help clarify the effects of the changing economic context on HR management in China.

From the late 1970s the Chinese government introduced a series of sweeping economic reforms embarking China on the road toward a market-based economy. These reforms included changes intended to promote labor mobility across sectors and regions, incentives for foreign direct investment (FDI), the privatization of state-owned enterprises (SOEs), and the promotion of domestic private firms. A critical element of this process has been the development of new industrial relations institutions and labor laws. Consistent with the more general policy orientation toward market liberalization, labor law reforms were aimed at creating a functioning labor market and enabling individual enterprises to determine a broad range of

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issues at the workplace level, including recruitment and dismissal, wages and other forms of remuneration, and investments in training. These reforms have not only modified the structure and dynamics of China's economy but also profoundly altered the approach of many enterprises to managing labor. This is particularly the case in SOEs in which Western management HR practices have been gradually introduced.

To what extent have these economic reforms provided the catalyst for the development of more sophisticated approaches to labor management in China, particularly the diffusion of Western-style human resource (HR) practices? To what extent has the use of these practices improved key establishment outcomes such as productivity, labor costs, and efficiency? Alternatively, to what extent have the intended effects of such practices faced barriers in implementation due to cultural and regulatory constraints? In this article we use data collected from a large sample of Chinese establishments in 2001 to assess (1) the varying take-up of specific HR practices; and (2) whether the deployment of these HR practices had a significant impact on three key measures of establishment performance: productivity, labor costs, and unit labor costs.

There is now a significant body of work that provides support for the hypothesis that HR practices can have a significant effect on performance. This work spans a number of industry and national contexts; however, few studies have assessed the extent to which Western-style HR practices have been adopted in Chinese establishments and the strength of the relationship between such practices and establishment outcomes. Given the enormous economic reforms that have transformed China's economy over the last 30 years, a unique environment exists in which to assess these questions. Such questions are particularly salient because researchers have faced several challenges in collecting establishment-level data in China that is of high quality and scope.

In this article we use an exceptional data set that allows us to investigate in a more robust manner the extent to which Western-style HR practices have been adopted in Chinese workplaces and their effect on a number of establishment outcomes. This is important because the transfer of Western HR practices in China has been generally documented in an anecdotal manner only, and the implications for organizational outcomes have not been well established. Significantly, our data enable us to assess whether the adoption of a range of HR practices has a significant effect on establishment performance (measured as value of sales per employee), labor costs (wage and nonwage labor costs), and unit labor costs.

China's Economic Reforms

The transition to a market economy in China has now extended over more than 30 years. This process has been widely documented by a number of scholars researching China's economic transition (e.g., Qian 2003; Wu 2005; Naughton 2007). It has consisted of successive waves of reforms and,

in contrast to the shock therapy administered to the command economies of Eastern Europe, the Chinese approach to transition has been a gradualist one (Child and Tse 2001).

The transition process has typically been characterized as consisting of two distinct phases (Naughton 2007). In the first phase, Chinese policymakers established a dual-track economic system, which allowed for an increasing level of market activity alongside the planned economy (Lin, Cai, and Li 1998; Lau, Qian, and Roland 2000).While this phase enabled a growth in competition in product markets through the formation of town and village enterprises (TVEs), domestic private enterprises (POEs), joint venture enterprises (JVEs) with foreign multinationals, and wholly foreign-owned enterprises (FOEs), the activities of SOEs remained virtually untouched, and the development of competitive labor markets was weak. From the early 1990s, a new wave of reforms was introduced. These reforms were intended to integrate the two systems (or tracks) through the strengthening of market institutions, particularly in the area of labor and capital markets, and by exposing SOEs to greater market competition through restructuring, privatization, and corporate governance reforms (Qian 2003).

As a consequence of these reforms, China has experienced a transformation in the institutional, technological, and organizational foundations of industry (Naughton 2007). New industries have been created, and existing ones have undergone major structural reform. These developments have, in turn, been associated with substantial reforms of institutions governing industrial relations and labor management at the workplace level (Frenkel and Kuruvilla 2002; Shen 2007). Before discussing these developments, a number of salient dimensions of the transition process need to be described.

Diversification of Ownership: FDI, SOE Reforms, and the Expanding Private Sector

A striking feature of the transition process has been the role of FDI and the growing diversity in corporate ownership. The value of FDI into China has grown from an average annual rate of less than 1% of GDP during the 1980s, rising sharply to 6% of GDP in 1994, and falling to around 3% per year since 2005 (Cole, Elliot, and Jing 2009). FDI has provided an important catalyst for China's rapid expansion during this period, as well as promoting the diffusion of technological and organizational innovations, and management capabilities (Naughton 2007). Since 1979, China has experienced an average annual real growth rate of around 9.5%, representing a sevenfold increase in GDP per capita over that period (Hoffman, Zhao, and Ishihara 2007).[1]

[1]The reliability of official data on GDP and other aggregate statistics have been widely questioned; see Naughton (2007) for a review. Naughton, for example, suggests that a large part of the explanation for China's rates of growth during this period is the significant underestimation of output during the early reform period. In a detailed assessment of productivity growth over the period 1978 to 1998, Young

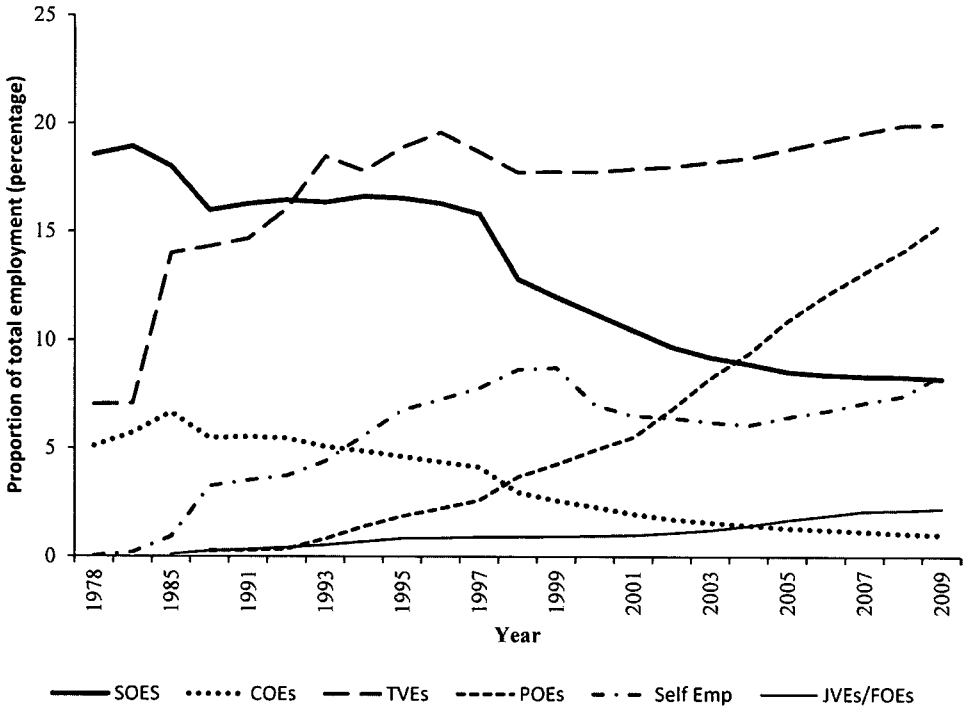
Commencing with the Open Door Policy of 1978, restrictions on FDI in Chinese industry were gradually removed. These reforms initially began with the creation of a number of special economic zones (SEZs) designed to attract foreign capital. Over the course of the 1980s, the number of SEZs was expanded and provided the platform for foreign investment in the form of joint venture enterprises and, then, from the 1990s, wholly owned foreign enterprises. By 2003 there were more than 100 SEZs across China (Jinglian 2005).The form that FDI took has also evolved significantly over this period. During the 1980s, various forms of joint ventures between a multinational firm and a domestic Chinese partner represented the typical ownership standard for which foreign investments were made. Since the late 1990s, however, these have been overtaken by foreign investment in the form of wholly owned foreign subsidiaries. By 2005, the latter accounted for around two-thirds of all FDI flows into China (Naughton 2007).

The growing importance of FDI to China's economic capacity was paralleled by reforms to SOEs. These reforms reflected the two phases of transition described above. In the first phase, SOEs were largely protected from external product market competition and remained a central part of Chinese industry. There were, nonetheless, a number of important reforms implemented during this phase to improve efficiency, including (1) the enhancement of the authority of enterprise managers to make resource allocation and production decisions; (2) the provision of incentive funds and profit retention schemes to fund enterprise investments, worker welfare provisions, and the payment of bonuses to production workers; and (3) the introduction of incentive mechanisms designed to reward SOE managers for improved performance (Groves et al. 1995). During the second phase of transition initiated in the mid-1990s, the external protections given to SOEs were removed and corporate law changes, aimed at facilitating corporatization and privatization of SOEs, resulted in a sharp decline in the number of SOEs and their employment levels (Megginson and Netter 2001). By 2005, most loss-making SOEs had been closed or sold off, while the most profitable ones had been corporatized or privatized (*zhuada fangxiao*).

The developments described so far contributed to a rapid diversification in ownership of Chinese-based enterprises, as summarized in Figure 1. This figure reports the number of workers employed by different types of enterprises and shows a dramatic shift in employment away from the state sector to private firms. In 1978, almost 75 million employees were working in SOEs, representing approximately 78% of China's urban workforce (or around 20% of the 401.5 million workers employed across different types of firms in both urban and rural areas). By 2009, however, employment in SOEs had fallen to just over 64 million employees, which represented less than 20% of all urban employment (or around 8.2% of China's 780 million strong

(2003) finds that once adjustments are made for rising labor force participation, the shift of labor from agriculture and improvements in educational attainment, labor and total factor productivity growth in the non-agricultural economy rose 2.6% and 1.4% annually.

Figure 1. Employment by Enterprise Type, 1978–2009



Sources: China Statistical Yearbook, various years, 1980–2009.
Notes: COE: collectively owned enterprises; FO/JVEs: foreign-owned and joint venture enterprises; POEs: domestic privately owned enterprises; SOEs: state-owned enterprises; and TVEs: township- and village-owned enterprises.

workforce). By contrast, the number of workers classified as self-employed rose from a miniscule 150,000 workers to represent a similar proportion of the workforce (65.9 million workers, or 8.4% of all workers) over the same period. Employment also grew dramatically in TVEs and POEs. Between 1978 and 2009, the proportion of the workforce employed in TVEs had increased almost threefold, rising from 7.1% of the workforce to just fewer than 20%. In 1978, no private sector firms existed; however, by 2009, this group of firms employed almost 120 million workers (or 15.4% of total employment).

Industrial Relations and HR in China

Industrial Relations and Labor Management Practices under the Planned Economy

Under a planned economy, China did not have a competitive labor market (Naughton 2007). Employment decisions and personnel management (*renshi guanli*) within SOEs and COEs were subject to centralized control, administered through detailed and rigid policy guidelines promulgated by the

Ministries of Labor and Personnel (Cooke 2005). Consequently, labor management practices were relatively uniform, irrespective of industry, workplace size, or occupation. The state determined employment and wage levels and how workers were recruited. The state also imposed detailed and restrictive personnel guidelines on the management of workers and labor issues, including a system of seniority for promotion and a narrow wage structure across occupations. These guidelines imposed common standards and gave management little capacity to tailor labor management practices to meet workplace needs.

For most workers, SOE work units (*danwei*) played a central role in their lives, providing them with a job for life, a range of welfare entitlements including subsidized housing, education, and healthcare and a retirement pension (Dong and Xu 2008). Labor management practices were modeled on the "three irons" (*jiu santie*): the iron rice bowl, the iron chair, and iron wages (Helburn and Shearer 1984), which provided for centrally planned job allocations, a strongly egalitarian and seniority-based pay structure, and a range of cradle-to-grave welfare and health entitlements provided through the enterprise (Zhang et al. 2008).

The combination of highly centralized employment and wage regulation was associated with an extremely inflexible system of labor management, overstaffing, and inefficient resource allocation, with many SOEs reporting stagnant or negative productivity growth over extended periods of time (Huang and Duncan 1997). Naughton (2007), for example, reports that by 1978, quits and dismissals had become virtually nonexistent. A Chinese urban worker was ten times more likely to retire and four times more likely to die on the job than to quit or be dismissed. This inflexibility was reinforced by the regulation of labor mobility through the household registration system, which restricted employment to local areas of residence (Kuruvilla and Erickson 2002).

Reforms to Industrial Relations Institutions after 1978

Reforms to labor market and industrial relations institutions introduced since the adoption of the Open Door Policy have been characterized as having three primary aims (Cooke 2005): (1) to create a competitive labor market;(2) to restructure work practices in SOEs; and (3), to allow, to a very limited extent, the establishment of workers' organizations. Table 1 summarizes the major industrial relations regulatory reforms introduced since 1978. As this table shows, the period before the 1990s was characterized by limited activity, with some attempts to build a degree of numerical flexibility into employment decisions of SOEs. In 1978 reforms were introduced to regulate the establishment of "grass-roots" union organization in joint ventures and, in 1986, changes in the law allowed firms to hire new employees for fixed five-year periods, with no obligation on either the firm or the employee to renew the contract after that period (Frenkel and Kuruvilla 2002). Further changes provided SOEs the right to lay off surplus workers (Shen

Table 1. Major Labor Law Reforms in China, 1978–Present

Year	*Law/Regulation*	*Key Reforms Introduced*
1978	Regulations on the Administration of Employment in Sino-Foreign Joint Ventures	– Stipulated the status, obligations, and rights of unions in newly formed joint venture undertakings
1986	Four Temporary Regulations	– Introduced the capacity for firms to hire workers on fixed-term contracts – Extended the scope for SOEs to lay off redundant workers
1992	Trade Union Law 1992	– Formalizes the legal status rights and obligations of unions at the workplace level
1993	Regulations on Settlement of Labor Disputes in Enterprises	– Established a new framework for labor dispute resolution
1994	Labor Law	– The first major employment law in China for a market-based system of labor allocation – Established uniform regulation for the formation of labor contracts – Specifies minimum labor standards and procedures for dispute resolution
1994	Provisions on Collective Contracts	– Extended and reformed the 1992 Labor Law, notably the creation of collective contracts at the workplace level
2001	Trade Union Law	– Specified the primary functions and legal obligations of trade unions – Established legal protections of union officials and union properties – Prescribed more detailed rules regulating the role and of "grassroots" union organization in the workplace
2004	Regulations on Collective Contract	– Introduced regulations for conducting collective negotiations and the signing of collective contracts
2008	Labor Contract Law	– Introduced new regulations covering: – the termination of employment contracts – employment protection for part-time and seconded workers – open-ended labor contracts – the right of employees to end labor contracts and receive severance rights
2008	Labor Dispute Mediation and Arbitration Law	– New provisions aimed to make arbitration procedures more accessible for workers
2008	Employment Promotion Law	– Established employment growth as a key economic development goal – Regulated the formation of employment agencies, vocational training, and placement assistance – Expanded prohibitions on workplace discrimination

2007). Nonetheless, it has been generally acknowledged that SOEs remained largely protected from the reform process during this period (see, for example, Dong and Putterman 2003).

Beginning with the adoption of a policy aimed at developing a socialist market economy in 1992, a progression of further labor law changes provided SOEs (and private sector enterprises) with greater autonomy over employment and wage-setting decisions, and removed obligations to provide welfare entitlements (Cooney 2007). These reforms involved a gradual extension of the employment contract system, as well as the extension of the

rights of union representatives in the workplace and their involvement in the negotiation of collective agreements (Gallagher 2005).[2]

In SOEs, this phase involved what were known as the Three Systems reforms (Cooke 2005), which included the replacement of lifetime employment arrangements with fixed-term contracts, the replacement of seniority with greater scope for the introduction of performance-based pay, and the privatization of enterprise-level social welfare arrangements with new welfare schemes in which workers were required to contribute to pension and other welfare insurance funds (maternity, unemployment, accident and medical) (Naughton 2007). After 1997, the restructuring of SOEs resulted in large-scale workforce reductions (Appleton et al. 2002). Taylor and Li (2007), for example, estimate that between 1998 and 2005, SOEs dismissed approximately 60%of their workforce, or around 30 million employees.

The Diffusion of HR Practices in China

These new market and institutional realities faced by corporatized or privatized SOEs were also reflected in innovation and evolution in the type of labor management practices utilized by other types of work organizations. Early research examining the types of HR practices deployed in the first generation of JVE arrangements indicated that foreign firms typically adapted to local HR practices (e.g., Helburn and Shearer 1984); subsequent studies indicate a gradual shift toward the diffusion of foreign HR practices, including the introduction of formal recruitment procedures, performance-related pay, and performance management systems (Björkman 2002).

These trends have to varying degrees been found in both domestic firms and foreign firms. Frenkel and Kuruvilla (2002), for example, observed that during the 1990s inefficient SOEs were typically forced to adopt a cost minimization and productivity improvement strategy. This has involved the adoption of low-skilled and low-pay employment arrangements and a reliance on numerical and wage flexibility to remain profitable. Foreign-invested firms have more typically adopted an HR approach based on foreign (home country) practices, but often with a blend of processes adapted from traditional Chinese employment arrangements that leads to a hybrid approach in which functional flexibility, quality, and training are given a priority role (Ding and Warner 1999; Björkman et al. 2008). For example, in a study of 97 foreign firms operating joint ventures in China during the mid-1990s, Lu and Björkman (1997) reported that most had introduced both performance management systems and performance-related pay systems based on home

[2]Although union rights to play a more pro-active role in the workplace have been extended considerably since 1992, their ambiguous role as both a party organization and a worker representative remains a major constraint on their capacity to act independently. These constraints are reinforced by the illegal status of strikes and other forms of industrial action (Cooney 2007). Strikes and protests are more typically initiated by unrecognized groups or more spontaneous actions (Lee 2007). There has, over the last few years, been an increasing tolerance for industrial action, and rank-and-file control over grassroots union activities in a growing number of instances.

country practices, but had substantially adapted them to the local environment. These involved adaptations such as the retention of some elements of seniority in promotion systems, narrow wage differentials, and relatively common performance pay increments across groups of workers.

Overall, the limited evidence indicates a somewhat uneven shift in labor management practices over the period of reform (Cooke 2005), which appears to reflect a number of factors: (1) the inconsistent and unbalanced manner in which regulatory changes have been interpreted and enforced in different provinces across China (Frenkel and Kuruvilla 2002); (2) the persistence of traditional approaches in corporatized or privatized SOEs (Taylor 2002); (3) a lack of understanding in POEs of the needs and consequences of adopting a more comprehensive approach to managing labor (Cooke 2005); and (4) potential incompatibilities between some HR practices (such as performance-based pay and large wage differentials) and cultural values (Yalabik et al. 2008).

Nonetheless, a growing body of evidence indicates that an increasing number of Chinese firms are developing the HR function and implementing more sophisticated HR strategies, although distinct differences in the use of HR practices persist between SOEs and domestic and foreign-owned private firms (Cooke 2009). In SOEs in particular, remnants of the personnel management practices associated with the planned economy survive: many older workers retain rights of lifetime employment, health care, and enterprise-provided pensions. In the same workplace, younger workers are more typically employed on fixed-term contracts and contribute to public social insurance schemes (Warner 2008).

HR Practices and Organizational Outcomes in the Chinese Context

The gradual and uneven take-up of HR practices in China is hardly surprising and reflects a broad range of factors. As the preceding discussion suggests, the shift toward a more sophisticated approach to HR has in large part been dictated by the graduated nature of institutional reforms over the last three decades. By the beginning of this century, many of the restrictions placed on both domestic and foreign firms use and implementation of various HR practices had been removed (Naughton 2007).

Nonetheless, a number of scholars have sought to highlight factors that are likely to constrain whether particular HR practices are deployed (Björkman et al. 2008). This literature suggests that a significant relationship between HR practices and performance may not be evident in the China context for two distinct reasons. First, transition economies such as China present an institutional environment that is significantly different from that found in established market economies (Peng and Heath 1996). Such an environment often generates a high level of institutional uncertainty, which is in turn likely to influence the effectiveness of any business strategies firms may seek to deploy, including returns on investments in HR capabilities (Law, Tse, and Zhau 2003). These differences have implications

for domestic firms—SOEs and private sector enterprises—as well as foreign firms (Child and Tse 2001). For SOEs or former SOEs, governments may continue to limit their discretion to allocate resources efficiently. They may also be relatively slow to acquire adequate management capability to operate in a market-based environment (Wang, Bruning, and Peng 2007). For foreign firms not subject to these constraints, transitional institutions may nonetheless inhibit their ability to effectively manage their operations. An aspect of particular concern is the high degree of discretion provided to local officials in the interpretation and application of rules designed to facilitate economic reforms. Such discretion has been associated with corruption, appropriation, and other forms of elite opportunism as well as discrimination against private sector firms (Law et al. 2003; Naughton 2007). Moreover, where reforms have introduced more market-oriented institutions, pre-existing political systems may, intentionally or otherwise, continue to exert an ongoing influence on regulatory institutions (Child and Tse 2001; Li et al. 2008).

Second, a number of researchers have highlighted the potential role of the normative institutional or cultural factors in constraining whether Western management practices can be effectively transferred to Asian countries (Bae and Lawler 2000; Björkman and Lu 2001; Yalabik et al. 2008). Cooke (2005: 116) has observed that HR policies in FOEs and JVEs are "not necessarily embraced by the employees with enthusiasm." This has been observed across a number of studies (e.g., Easterby-Smith, Malina, and Lu 1995; Huo and Von Glinow 1995; Evans, Pucik, and Barsoux 2002). In the Chinese context, particularism in social and business relationships, evident in the role that established networks (*guanxi*) and status play, may mitigate the effectiveness of practices based on employee involvement. Similarly, the available evidence suggests that Chinese workers adhere to a strong egalitarian ethic and have not generally accepted significant wage differentials as a form of incentive (Taylor 2002). Although the use of bonuses and incentive-based pay are widespread, notably after reforms introduced in the mid-1990s, these types of bonuses have been found to be distributed across employees, regardless of their performance (Taylor 2002).

Cross-cultural research on management practices also provides strong support for the hypothesis that "members of high power-distance societies believe that subordinates should play the role of taking instructions and orders from their supervisors" (Hui, Au, and Fock 2004: 47).Consequently, managers operating in these cultural contexts will be less willing to delegate decisions, and employees less willing to exercise discretionary behaviors. A number of studies have found that Chinese employees are more dependent on supervisors and show a higher acceptance of power differences than do employees in Western countries (Giacobbe-Miller et al. 2003; Hui et al. 2004).

These culturalist arguments have, however, been criticized as being overly static in the way culture is conceptualized (Fang 2006) and as providing a weak basis for understanding changing management practices over time

(Edwards and Kuruvilla 2005). The extent of economic reforms in the Asian context may generally be associated with shifting cultural norms, which are in turn linked to a more ready acceptance of HR practices (Bae et al. 2003). Such reforms are likely to be evident in the Chinese context in particular as industry has modernized and internalized Western management influences (Frenkel and Kuruvilla 2002). Ralston et al. (2006) found that work values held by mainland Chinese managers had, over the last 20-year period, tended to converge with the values of managers from Hong Kong and the United States.

Despite these perplexities, a number of studies have begun to investigate the effects that HR practices may have on organizational performance in the Chinese context (Law et al. 2003; Sun, Aryee, and Law 2007; Akhtar, Ding, and Ge 2008; Ngo, Lau, and Foley 2008).[3] A diverse range of measures are used in these studies, both in terms of measuring performance outcomes (employee turnover, productivity, perceived profitability, and return on equity), and the types of HR practices that are expected to influence these outcomes.

In one of the earliest of these studies, Law et al. (2003) examine the relationship between the extent to which top management perceive the organization's HR approach to be strategic and the firm's performance. Although this study also includes a measure of employees' attitudes toward management, unfortunately, it did not provide any information about variation in HR practices or their consequences for organizational performance. Using a single item measure drawn from Devanna et al.'s (1982) HR index, Ngo et al. (2008) report a study of the effect of HR practices on firm performance in 600 Chinese firms. They find that HR practices have a significant effect on an organization's performance, which was moderated by the employee relations climate. The reliability of their findings is also qualified by their use of subjective measures of financial performance. Similarly, while Aktar et al. (2008) use a well-established instrument to measure HR strategy, their reliance on a measure of performance based on managerial perceptions raises questions about the validity of their findings. Finally, in a piece of research investigating the HR–performance nexus, Sun et al. (2007) examined the relationship between high performance work systems (HPWS), organizational citizenship behaviors, and organizational performance (voluntary turnover and sales per employee) in a small sample ($n = 81$) of Chinese hotels located in a single province. Notwithstanding the high quality of the data collected, the authors recognize a number of limitations, including the small sample size, the single industry, and single geographic focus of the study, which in turn suggests the need for further research. Note, however,

[3]A body of work published in Chinese examines different aspects of the HR–performance relationship (Zhao 2001; Fan and Björkman 2003; Lui, Zhuo, and Chao 2005; Su, Zeng, and Wright 2007; Qiao, Wang, and Luan 2008). These studies have typically found no relationship or weak relationships between HR practices and performance. Su et al. (2007) have attributed this in large part to methodological weaknesses of many of the studies so far undertaken in the Chinese context.

that none of these studies examine the impact of HR practices on labor costs or unit labor costs.

In short, after more than 30 years of economic and industrial relations reforms in China, we believe there is a need to examine the extent to which Western-style HR practices have been adopted in this country and their effects on organizational outcomes. Moreover, China represents a unique example of a transition economy in that the pace and type of institutional, economic, and social reforms in this country have been significantly different from other experiences, typically in Central and Eastern Europe. This need is further reinforced by the fact that available empirical research examining the link between HR practices and organizational outcomes is unsatisfactory in terms of either sample size or the measures adopted.

Empirical Approach

We report on an analysis of survey data on the adoption of HR practices in a large sample of Chinese establishments and, using a standard production function framework deployed in the HR–performance literature, we seek to assess the impact of HR practices on a number of establishment outcomes in the Chinese context. To do so, we derive measures capturing whether an establishment uses a broad range of HR practices covering non-managerial employees, including training, employment security, nonwage benefits, pay systems, employee involvement, recruitment, and grievance procedures and then assess their impact on sales per employee, a commonly used proxy for organizational performance. Unlike most studies, however, we extend the empirical analysis to examine the effects of HR practices on two other organizational outcomes: labor costs and unit labor costs. Even though these outcomes are critical to understanding the true value of HR practices, they are rarely examined simultaneously alongside performance effects—see Cappelli and Neumark (2001) and Way (2002) for exceptions to this observation.

Data Description

Data used in this study were obtained from an unpublished survey administered in China by the International Labor Office in 2000 to 2001 as part of its cross-national Enterprise Labor Flexibility and Security (ELFS) survey program. The ILO has conducted a number of ELFS surveys in developing and transition economies in Asia, the Americas, and Eastern Europe. The ELFS surveys consist of a core questionnaire design, which is then adapted to the survey environments in each country. As a result, individual measures based on established labor market and HR-related surveys undertaken in industrialized countries have been adjusted to local conditions so they could be easily understood and answered by respondents (Standing 2003). In some instances, items were introduced to capture country-specific labor management practices. For example, in transition economies such as China,

measures relating to the importance of enterprise-based social welfare benefits, the percentage of employees laid off, and non-production sources of income were included.

A sample of 1,024 establishments was selected using a random start with the probability of being selected based on population proportions according to employment size and sector. The respondent establishments were evenly (approximately) distributed over the 3 regions included in the survey (Hangzhou, Zengzhou, and Lanzhou).[4] Table 2 summarizes the characteristics of establishments included in the final sample used in the study.

The ELFS survey questionnaires more closely resemble an official census than an academic survey, both in terms of the types of questions asked and in the sense that participation of selected firms was compulsory (Buck et al. 2003). The China ELFS survey consisted of two parts, administered at different points in time in 2000 and 2001. Both parts were administered by the Academy of Labor and Social Security in the Chinese Ministry of Labor and Social Security. Face-to-face interviews were conducted with senior managers, usually accompanied by ILO staff. The first part of the survey was completed by a financial representative (a firm accountant or financial officer) and contained questions relating to establishment characteristics, the establishment's revenue and cost structure, resource allocation, the number and characteristics of employees, wages, and other nonwage labor costs. The second part, which was administered to HR and operational managers, consisted of questions that asked about a broad range of employment arrangements, labor management practices, and employee outcomes.

Interviewers and supervisors of the fieldwork were trained using a common training manual. Training sessions detailed basic concepts underlying survey questions, items and questions used in the survey, and appropriate interview techniques. This process also led to some rewording of the questionnaire to remove potential misunderstanding of terms. Data reliability was enhanced as two or more visits were often undertaken to firms and, in addition, random field checks were made to monitor the interviewers' accuracy. The design for data collection also had a number of significant features. First, the survey instrument relies on objective data, with no attempt to collect information about management or employee attitudes. Second, the use of multiple informants minimizes the likelihood that the method of data collection is likely to contribute to correlation between variables (common method variance), thereby producing an overestimation of the likely effects of HR practices on establishment performance. Third, the use of key informants with appropriate knowledge of the information to be collected provides a greater level of confidence in the quality of the information

[4]Hangzhou is the capital of the southern province of Zhejiang. Traditionally a center of textile and heavy machine manufacturing, it has developed into a center of electronics and other forms of manufacturing. Zengzhou is the capital of the northern province of Henan and is an area of textile and heavy manufacturing. Lanzhou is the provincial capital of Gansu in northwestern China and has emerged as a center of energy production, manufacturing, and resources.

Table 2. Sample Characteristics (n = 1,024)

Establishment Characteristic	*Number of establishments*	*Percentage (%)*
Workplace size		
1–49	291	31.7
50–99	167	18.2
100–499	308	33.6
500+	151	16.5
Ownership type		
SOE	275	26.9
COE	208	20.3
Private	373	36.4
Foreign (FOE/JVE)	129	12.6
Location		
Hangzhou	331	36.1
Zengzhou	226	24.6
Lanzhou	360	39.3
Establishment age		
Less than 5 years	240	23.4
5 but less than 10 years	221	21.6
10 or more years old	552	53.9
Don't know	11	1.1
Industry		
Mining	10	1.1
Metals*	30	3.3
Machinery, engineering*	163	17.8
Computers, electronics	19	2.1
Food processing*	91	9.9
Chemicals*	89	9.7
Pharmaceuticals	12	1.3
Printing, paper, wood*	36	3.9
Furniture	8	0.9
Textile, clothing*	63	6.9
Construction*	64	7.0
Other, manufacturing*	35	3.8
Electricity, gas, water	6	0.7
Transport, storage, communication*	43	4.7
Wholesale, retail trade*	106	11.6
Finance	8	0.9
Real estate*	31	3.4
Hotel, restaurant, travel*	57	6.2
Health and social work	5	0.5
Repair	7	0.8
Services, general	20	2.2
Education	6	0.7
Other, generic	8	0.9
Total	**917**	**100.0**

* indicates industry categories for which dummy variables were constructed as controls in our estimations.

collected. Overall, then, the survey process allowed for the collection of detailed information in a more reliable way than what is often associated with surveys using key informants.

Variables

A review of prior literature suggests that a number of HR practices are typically viewed as core to the functioning of an HR system and are likely to influence establishment outcomes. While a diverse range of HR practices have been included in previous studies examining the HR–performance relationship, most of this research included HR practices that empower nonmanagerial employees by providing greater opportunities to participate in decision-making. For such opportunities of involvement to be effective, HR systems also require the adoption of practices that enhance employee skills and provide adequate motivation for employees to participate and utilize such skills in ways that improve productive efficiency. Opportunities for involvement may be provided through a great variety of mechanisms, including work teams, total quality management (TQM), and other consultative practices.

The ELFS survey allows us to examine a range of key features of HR systems, including training arrangements, aspects of internal employment systems, nonwage benefits, incentive-based pay systems, forms of labor–management cooperation and other employee voice mechanisms, recruitment, and finally, dispute settlement arrangements.

Organizational Outcomes

In this study we included an assessment of HR practices on three organizational outcomes: sales per employee, labor costs, and unit labor costs. *Sales per Employee* (in 2001) provides a proxy for organizational productivity. This has been a commonly used measure in several studies across cognate disciplines such as strategic management, the economics of organization, finance and accounting,[5] as well as studies seeking to estimate the relationship between HR practices and organizational performance. Sun et al. (2007: 567) suggest that this is an appropriate measure of organizational performance because "it provides a single index that can be used to compare a firm's productivity as well as to estimate the dollar value of returns for investments in employees through high-performance human resource practices. This measure of productivity reflects employee efforts that are somewhat insulated from variations in the capital and product markets."[6]

[5]See Richard et al. (2009) for a recent review of the organizational performance literature.

[6]Cappelli and Neumark (2001) have also argued that financial measures, such as profitability, may not be the most appropriate measures to assess performance in multi-establishment firms because firms may use different methods for calculating internal measures of plant-level performance, particularly where some production costs may be borne by the firm rather than the establishment.

We are aware that this measure can be problematic, particularly when used in a transition context. In particular, sales per employee can overstate the productivity effect for two main reasons. First, firms may produce more than what is optimal to reduce stock and to sell at a lower margin. This is a particularly sensitive issue in SOEs because managers are under both market and political pressures to perform. Second, the number of employees tends to be higher than what is officially declared, as the informal sector is growing in China, particularly in private enterprises, and employers seek to avoid legal constraints and to avoid paying social security contributions. Despite these limitations, we believe that sales per employee can still provide very useful information in the Chinese context as firms were encouraged by the Ministry of Labor to be as transparent as possible in reporting their responses. In the ELFS survey, each establishment was asked to disclose the total value in Chinese Renminbi (RMB) of sales in 1999 and 2000. The mean of these two responses was then divided by the total number of regular employees at each establishment to provide an estimate of sales per employee.

Labor Costs were captured using two measures: the logged value of the total wages costs per employee and the logged value of nonwage labor costs per employee. The ELFS survey included a question that asked respondents to indicate the total wage costs and nonwage costs for each of the previous two years. In each case the values for the two years were summed and the log of the mean value taken as our measure. Here, nonwage labor costs include allowances for workers, social security contributions, and payments in kind to employees and/or workers (meals, medical expenses, and transport allowances).

Unit Labor Costs were estimated following Cappelli and Neumark (2001), which use the log of the ratio of sales per worker to labor costs per worker (or the log of the inverse of unit labor costs).

Training

Employer provided training is measured as the proportion of all employees at the workplace who had received training. Training included both formal and on-the-job training programs run by the establishment. The survey actually asked respondents to indicate the number of employees who received training in 1999 and 2000. In each case the response was divided by the number of employees and the estimate was computed as the average over these two years.

Regular Workers

Employment stability in the form of regular employment provides workers with incentives to invest in firm-specific skills and to encourage discretionary effort (Wu and Chaturvedi 2009). The survey asked respondents to specify the number of employees belonging to the following work statuses:

regular full-time, regular part-time, temporary or casual, contract workers, trainees or apprentices. To best capture the proportion of workers who enjoyed stable employment, we calculated the proportion of the total workforce that was employed as regular employees.

Benefits

The presence of various nonwage benefits schemes provides means to elicit greater commitment from employees to their organization (Haines, Jalette, and Larose 2010). This is particularly important in China, where a broad range of nonwage benefits were common, especially in SOEs. The survey asked respondents whether eight employee benefits were provided by the employer: paid leave, paid sick leave, holiday/recreation facilities, sickness benefits, subsidized housing, childcare, pension/retirement benefits, and subsidized transport services. A value of 0 was assigned for each benefit that was not available, and a value of 1 was coded if the benefit was provided by the employer. The scores for individual benefits were summed to obtain an overall score.

Incentive-Based Pay

Within the HR literature, incentive-based pay arrangements have generally been viewed as an important complement to both investments in employee skills and different forms of employee involvement. Studies have also found that variable pay schemes may contribute to performance by reducing labor turnover (Haines et al. 2010). The survey asked three questions, which we used to capture the use of incentive pay systems. The first question asked whether the establishment operated a profit-related pay system for employees (No = 0, Yes = 1). The second question asked whether the establishment operated any incentive scheme for individual employees, such as bonus schemes (No = 0, Yes = 1). The third question asked respondents to indicate whether the establishment had introduced any other income-related benefit scheme, such as skilled-based pay (No = 0, Yes = 1). These three measures were first entered as individual items, and then in a separate regression as a composite variable, consisting of the sum of responses to these three items.

Labor–Management Cooperation

Central to most studies examining the effects of HR practices on establishment outcomes has been the extent to which employees are provided with opportunities for involvement in decision-making. Typically, researchers have been interested in the role of self-managed or autonomous work teams in eliciting discretionary effort and increased productivity. Unfortunately, our survey did not include any questions relating to work teams; however, the questionnaire did ask respondents whether participation-enhancing work practices were employed: quality circles, joint consultation arrangements to

discuss work and production related issues, and other. Responses to these three items were coded as dichotomous variables (No = 0, Yes = 1). Quality circle and joint consultation items were entered as individual items and then in a separate regression as a composite measure consisting of the sum of responses to the three items.

Occupational Health and Safety Committee

The survey asked respondents to indicate whether the establishment had a committee or department to maintain the safety of workers at the workplace. Responses included: 1 = "Yes, a safety committee"; 2 = "Yes, a safety department"; 3 = "Yes, both a safety committee and a safety department"; or 4 = "No". These responses were re-coded to either Yes (= 1) or No (= 0) to generate a dichotomous variable.

Recruitment

Measures capturing various recruitment practices were also included in our study. The intention was to assess how such practices might influence the quality of employees. More robust recruitment practices are also expected to result in better quality matches between the firm and its employees and to reduce employee turnover. The survey asked respondents to indicate the main method used for recruiting production and shop floor workers. Responses were categorized as recruitment through advertising, direct recruitment, recruitment through educational institutions, informal recruitment through relatives and friends, and other. Each category was coded as a dichotomous variable (No = 0, Yes = 1).

Probation

The use of probationary periods may enhance performance for two reasons (Loh 1994). First, probation periods provide an employer with information that may not be available at the time of recruitment. Second, probation has also been found to discourage less-qualified workers from applying for jobs. The survey asked respondents to indicate whether the establishment usually hired new employees on a probationary basis (No = 0, Yes = 1).

Formal Dispute Settlement Procedure

The final HR practice we include is a measure of whether the establishment has a formal dispute resolution procedure. Such procedures are generally viewed as an important mechanism that allows dissatisfied employees to voice their grievance rather than exit. Properly functioning dispute mechanisms are expected to improve employee perceptions of organizational justice (Haines et al. 2010). This in turn is viewed as a key means through which HR practices are likely to have positive performance effects (Wu and

Chaturvedi 2009). Our survey asked the question: "How are labor disputes settled in the establishment?" Respondents were asked to indicate whether disputes were settled through a voluntary dispute settlement procedure, through a Labor Dispute Court, or some other arrangement. Our interest was in understanding establishment-level HR practices. We therefore recoded responses to equal 1 if disputes were settled using an establishment-level voluntary dispute settlement procedure, and to equal 0 for all other responses.

Control Variables

A key concern among many researchers has been to identify potential biases introduced by missing variables (e.g., Bartel 2004), some of which reflect differences in industry environments (Datta, Guthrie, and Wright 2005). To ensure these types of factors are accounted for, our analysis includes the following control variables: union presence (No = 0, Yes = 1), logged value of establishment age, dummy variables capturing different ownership types, and industry and regional dummy variables. Union presence is included to ensure any union effects are captured. While it is commonly believed that the dependency of Chinese unions on the state means they are unlikely to function independently of management, recent evidence suggests they may nonetheless play an important role in influencing establishment level outcomes (Ge 2007). The other controls are intended to capture differences such as industry dynamism, entrenched management styles and systems, and regional differences, which may also affect the potential returns on investments of HR practices. This is perhaps particularly significant in the context of transition economies in which regional differences in regulatory arrangements and enforcement may substantially impact on firm performance (Child and Tse 2001; Law et al. 2003). In the case of industry dummies, establishments were originally categorized in the survey as one of 23 industry categories. As Table 2 indicates, the sample for some industry groups was extremely small, making it impossible to rely on these as separate variables. When this was the case, these dummies were dropped from our estimation. Of the 23 industry categories identified in the survey, 12 categories (indicated in Table 2) were used as control variables. Finally, dummy variables were created for each of the regions in which establishments were located.

Table 3 presents means, standard deviations, and correlations for all variables except the industry and region dummies. The correlations among variables were typically low, with a number of unsurprising exceptions. The capital inputs ($r = .679$, $p < 0.01$) and number of employees ($r = .540$, $p < 0.01$) were strongly correlated with sales per employee. The log value of capital was also highly correlated with the log number of employees ($r = .651$, $p < 0.01$). Correlations among HR practice variables were generally low, indicating our results are unlikely to suffer from multicollinearity. Generally, HR practices were positively associated with establishment performance,

Table 3. Correlations among Variables

Variables	*1*	*2*	*3*	*4*	*5*
1. Ln Sales	1.00				
2. Ln Capital	0.68**	1.00			
3. Ln Employment	0.54**	0.65**	1.00		
4. Ln Establishment Age	0.18**	0.30**	0.37**	1.00	
5. Union presence	0.32**	0.33**	0.33**	0.38**	1.00
6. POE	0.06	−0.14**	−0.13**	−0.37**	−0.15**
7. SOE	0.09**	0.28**	0.26**	0.36**	0.23**
8. COE	−0.25**	−0.24**	−0.13**	0.20**	−0.01
9. FOE/JVE	0.13**	0.14**	0.01	−0.19**	−0.09**
10. Training	0.00	−0.05	−0.13**	−0.17**	−0.27**
11. Regular workforce	−0.03	−0.03	−0.17**	0.04	0.02
12. Benefits	0.46**	0.31**	0.28**	0.13**	0.30**
13. Profit-based pay	0.21**	0.14**	0.17**	0.10**	0.15**
14. Individual incentive	0.29**	0.10**	0.08*	−0.11**	0.05
15. New incentive	0.05	0.06*	0.05	−0.13**	−0.04
16. Quality circle	0.00	0.00	0.03	−0.02	0.07*
17. Joint consultative group	0.07	0.04	0.08*	0.03	0.09**
18. OH&S committee	0.12**	0.18**	0.15**	0.07	0.08
19. Recruit – advertise	0.09**	0.03	0.00	−0.16**	−0.04
20. Recruit – direct	−0.07*	−0.03	−0.03	−0.13**	−0.15**
21. Recruit – educational institution	0.27**	0.26**	0.26**	0.12**	0.14**
22. Recruit – informal	−0.10**	−0.13**	−0.10**	−0.14**	−0.14**
23. Probation	0.28**	0.20**	0.14**	−0.12**	0.01
24. Formal dispute procedure	0.01	−0.03	0.03	0.01	−0.01
25. Ln Wage Costs	0.71**	0.68**	0.72**	0.30**	0.34**
26. Ln Nonwage costs	0.08	0.05	−0.24**	0.06	0.08*
27. Ln Unit Labor Costs	0.30**	0.03	0.03	−0.03	0.02

Variables	*15*	*16*	*17*	*18*	*19*
1. Ln Sales					
2. Ln Capital					
3. Ln Employment					
4. Ln Establishment Age					
5. Union presence					
6. POE					
7. SOE					
8. COE					
9. FOE/JVE					
10. Training					
11. Regular workforce					
12. Benefits					
13. Profit-based pay					
14. Individual incentive					
15. New incentive	1.00				
16. Quality circle	0.12**	1.00			
17. Joint consultative group	0.11**	0.41**	1.00		
18. OH&S committee	0.07	0.00	−0.01	1.00	
19. Recruit – advertise	0.12**	0.01	0.07*	0.07	1.00
20. Recruit – direct	0.06	−0.04	0.00	0.00	−0.04
21. Recruit – educational institution	0.09**	0.06*	0.03	0.08*	0.04
22. Recruit – informal	0.02	0.02	−0.01	0.01	0.19**
23. Probation	0.15**	0.07*	0.01	0.06	0.17**
24. Formal dispute procedure	0.04	0.04	0.04	−0.07	0.01
25. Ln Wage Costs	0.04	−0.03	0.06	0.13**	0.04
26. Ln Nonwage costs	−0.05	−0.03	0.03	0.04	0.05
27. Ln Unit Labor Costs	0.05	0.04	−0.05	0.05	0.03

* Statistically significant at the .05 level; ** at the .01 level.

Table 3. Continued

6	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
1.00								
−0.46**	1.00							
−0.38**	−0.31**	1.00						
−0.29**	−0.23**	−0.19**	1.00					
0.11**	−0.12**	−0.09**	0.10**	1.00				
−0.02	0.01	0.05	−0.05	0.14*	1.00			
−0.05	0.14**	−0.19**	0.20**	−0.01	0.07	1.00		
−0.01	0.12**	−0.04	−0.08**	0.05	−0.03	0.22**	1.00	
0.11**	−0.07*	−0.15**	0.12**	0.06	0.03	0.43**	0.23**	1.00
0.06	−0.06*	−0.06*	0.08**	0.14**	−0.04	0.11**	0.08*	0.20**
−0.02	−0.04	0.03	0.02	−0.01	−0.03	0.03	0.08*	0.02
0.03	−0.04	0.00	0.01	0.01	0.09*	0.13**	0.10**	0.05
−0.19**	0.12**	−0.01	0.09*	−0.01	0.02	0.03	0.08*	−0.03
0.12**	−0.14**	−0.09**	0.14**	0.09	−0.02**	0.06	0.02	0.15**
0.10**	−0.12**	0.00	0.03	−0.01	0.04	0.01	−0.06*	0.06
−0.06	0.11**	−0.13**	0.10**	−0.06	−0.08	0.19**	0.16**	0.13**
0.07*	−0.12**	0.01	0.03	0.09	−0.07	−0.13**	0.01	0.03
0.08**	−0.05	−0.16**	0.15**	0.09	−0.03	0.26**	0.15**	0.31**
0.05	−0.03	0.00	−0.05	0.02	−0.04	0.17**	0.07*	0.11**
−0.08*	0.22**	−0.23**	0.15**	−0.09	−0.02	0.45**	0.15**	0.23**
−0.04	−0.02	−0.04	0.07	0.02	0.30**	0.24**	−0.06	0.16**
0.04	−0.05	0.03	−0.03	0.07	−0.07	0.03	0.10**	0.02

20	*21*	*22*	*23*	*24*	*25*	*26*	*27*	
1.00								
−0.14**	1.00							
−0.01	0.04	1.00						
0.10**	0.22**	0.08**	1.00					
0.09**	0.05	0.00	0.11**	1.00				
−0.01	0.28**	−0.13**	0.28**	0.05	1.00			
−0.07*	0.05	−0.05	0.07	−0.01	0.21**	1.00		
−0.02	0.04	0.06	−0.02	−0.03**	−0.16**	−0.29**	1.00	

Table 4. Take-up of HR Practices by Firm Type (Percentage of Firms within Type)[a]

	Firm type[b]				
HR Practice	*SOE*	*POE*	*FOE*	*JVE*	*All firms*
Proportion of workforce regular employees					
< 50 percent of total workforce	58.5	66.8	63.9	63.6	63.5
50–74 percent	6.2	4.0	2.1	0.8	5.3
75+ percent	35.3	29.2	35.3	35.7	31.3
Proportion of workers in training					
Less than 20 percent of regular workforce	84.0	81.5	87.5	63.6	81.1
20–49 percent	9.8	11.5	9.6	22.5	12.1
50+ percent	6.2	7.0	2.9	14.0	6.8
Benefits index[c]					
No benefits provided	9.0	24.4	22.0	6.9	17.5
1–2 benefits	11.4	15.8	26.8	5.2	15.9
3–4 benefits	28.9	18.7	23.6	20.7	23.0
5–6 benefits	38.0	22.0	22.0	34.5	28.0
7–8 benefits	12.7	19.1	5.5	32.8	15.5
Incentive pay					
Profit-based pay	61.5	50.9	47.6	41.1	51.9
Individual incentives	46.9	59.5	37.5	68.2	52.5
Other incentive schemes	17.5	24.9	16.8	31.0	21.9
Labor–management cooperation					
Quality circles	2.5	3.2	4.8	4.7	3.6
Joint consultation committee	4.4	6.7	5.8	6.2	5.8
OH&S committee	53.4	30.9	42.3	56.2	42.8
Recruitment					
Through advertisement	6.2	19.6	7.7	27.1	14.3
Direct recruitment	33.8	50.7	43.8	48.1	44.2
Through educational institution	30.5	19.8	12.0	34.1	23.0
Informal recruitment	6.2	16.1	13.5	15.5	12.7
Probation period used	66.5	75.1	55.3	88.4	70.3
Formal Dispute Resolution Procedure	9.3	21.4	24.4	17.5	18.1

[a]The table reports the proportion of all firms (n = 1,024) within each type that has adopted each of the included HR practices. Percentages within groups may not add to 100.0 due to rounding.
[b]SOE: State-owned enterprise; POE: Privately owned enterprise; FOE: Foreign-owned enterprise; JVE: Joint venture enterprise.
[c]The benefits index was the sum of eight dummy variables that captured whether an establishment provided any of the following eight benefits: paid leave, paid sick leave, holiday/recreation facilities, sickness benefits, subsidized housing, childcare, pension/retirement benefits, and subsidized transport services.

although the informal recruitment variable was negatively associated with sales per employee.

Corporate Ownership and the Adoption of HR Practices

We first present descriptive statistics on the adoption of different HR practices across types of firms. Table 4 reports the take-up of each of the HR practices described above. As this table shows, the adoption of different types of practices differed significantly across types of firms. Domestic POEs tended to employ a smaller proportion of their total workforce as regular

employees than did other types of firms. While the overwhelming majority of establishments reported that less than 20% of their workforce received training, a significantly higher than expected proportion of JVE firms—14% compared with 6.8% for the entire sample—reported that they provided training for more than half of their employees. The Benefits Index captured a range of entitlements typically associated with the social welfare functions of the *danwei*. The enduring nature of these practices is evident particularly among SOEs, which reported significantly higher levels of provision of each of the eight benefits, as well as being more likely to provide a relatively higher number of these. This compares with a tendency among FOEs and domestic POEs to provide none or a small number of these benefits. Interestingly, JVEs show a pattern of benefit provisions more closely related to SOEs than to private sector firms.

There are also significant differences in the type of incentives provided to workers. Domestic firms—state-owned and privately owned firms—show a significantly higher propensity to utilize profit-based incentive schemes than do foreign firms or JVEs. Indeed FOEs show a significantly lower propensity to use any form of incentive pay arrangements compared with other types of firms. This difference is particularly evident in the proportion of FOEs utilizing individual forms of incentive pay (37.5% of firms, compared with 52.5% of all firms).

Although few Chinese establishments reported having instituted quality circles (3.6% of all firms), a significantly higher proportion of FOEs (4.8%) and JVEs (4.7%) report this practice than either SOEs (2.5%) or domestic POEs (3.2%). Joint consultative committees were more widely used, although our data suggest that by 2001, less than 10% of establishments had such arrangements in place. Again, SOEs were far less likely to report consultative committees than did other types of firms. In contrast to either quality circles or joint consultative committees, a far larger proportion of establishments reported having an OH&S committee in place. Unlike the other forms of labor management consultation, OH&S committees were more prevalent in SOEs than other types of establishments. Privately owned and FOEs show a significantly lower propensity to institute OH&S committees than either SOEs or JVEs.

Table 3 shows that the most widely used method of hiring is direct recruitment; that is, directly hiring employees at the establishment door, without advertising or using an external agency. This practice was most common in POEs and JVEs, although a significantly higher proportion of POEs (19.6%) and JVEs (27.1%) also reported utilizing advertising as a way of attracting potential employees, compared with SOEs (6.2%) and FOEs (7.7%). Interestingly, a similar pattern is evident in relation to the use of probation periods. Those firms who reported the use of advertising in recruitment were also significantly more likely to report using a probationary period as part of their recruitment decisions.

Finally, a significantly higher proportion of private sector firms—both domestically and foreign-owned establishments—reported having a formal

dispute resolution process compared with either SOEs or JVEs. Again, this may reflect traditional systems within SOEs, which relied on management dominated "grass roots" (i.e., workplace) unions to manage grievances (Liu 2010).

HR Practices and Organizational Outcomes

How have these practices influenced establishment outcomes in the Chinese context? Our data enable us to assess whether these practices are associated with three important indicators of firm performance: sales per employee, labor costs, and unit labor costs. Most studies have generally focused on examining the impact of HR practices on measures of productivity or financial performance, but few studies have attempted to assess the impacts of these practices on labor costs and the cost of producing each unit of output. Moreover, Cappelli and Neumark suggest that these three variables "can be interpreted in terms of what matters most to different parties" (2001: 753). Employers have an obvious interest in productivity and unit labor costs as a measure of efficiency, while employees will (all else being equal) be better off where wage and nonwage expenditures are higher.[7]

Sales per Employee

Following previous studies examining the HR-performance relationship (e.g., Black and Lynch 2001; Bartel 2004), we base our empirical estimation on an augmented Cobb-Douglas production function containing the value of sales (Y), labor (L), capital (K), and HR practice variables. A persistent problem identified in the research is the omission of relevant variables, thereby introducing biases in the estimate of the true relationship between HR practices and establishment performance (Gerhart et al. 2000). Using a more structured production function has the advantage of including base inputs of an establishment's production systems that have been excluded from many estimations of the relationship between HR practices and firm performance.[8]

[7]The strength of this ceteris paribus assumption has been questioned by some research. Black, Lynch, and Krivelyova (2004) show that the costs of implementing high performance work practices may be unevenly distributed across the workforce, through higher wage inequality and employment reductions. Similarly Godard (2001) shows that while alternative work practices have positive effects at a "moderate" level of adoption, such practices are also associated with negative employee outcomes when used more intensively.

[8]The production function used to estimate the effects of HPWS adopts a standard constant returns to scale function $Q=\alpha K^{\beta}L^{\gamma}$, where Q is some measure of output, K is capital stock, and L is a measure of labor inputs. This form has been the one typically used in studies adopting a production function estimation framework. Black and Lynch (2001) test alternative specifications but find no significant differences in coefficients on capital and labor inputs or HR practices. In this framework, our measure of L is effectively augmented by introducing variables to capture the impact of HR practices in transforming a "raw" estimate of L into effective labor (Bartel 2004). Here we estimate the following regression: $lnY_i = \alpha + \beta lnK_i + \gamma lnL_i + \delta' HR_i + \eta' CONTROLS + \varepsilon_i$, where lnY_i is the log of sales, lnK_i is the log of the value of capital,

Table 5. Effects of HR Practices on Sales per Employee (OLS Estimates[a])

	Model 1		*Model 2*		*Model 3*	
	beta	*t-statistic*	*beta*	*t-statistic*	*beta*	*t-statistic*
Control variables						
Union presence	0.105**	3.563	0.039	0.365	−0.033	−0.292
Industry[b]	—	—	—	—	—	—
Region[b]	—	—	—	—	—	—
Establishment characteristics						
Ln (Value of capital equipment)	0.458**	12.120	0.650**	4.822	0.619**	4.014
Ln (No. of employees)	0.244**	6.615	0.386**	2.983	0.461**	3.112
Log (Establishment age)	0.029	0.904	−0.127	−1.388	−0.143	−1.394
Ownership						
State-owned	−0.083**	−2.492	−0.091	−0.850	−0.086	−0.692
Collectively owned	−0.032	−0.965	0.116	1.140	0.068	0.602
Foreign-owned/joint venture	−0.006	−0.198	−0.039	−0.439	−0.039	−0.360
HR variables						
Training (proportion of total workforce)			0.181*	1.909	0.275*	2.087
Regular workers (proportion of total workforce)			−0.079	−0.933	−0.030	−0.298
Benefits			0.045	0.436	0.060	0.447
Incentive-based pay			0.056	0.651		
Profit-based pay					0.008	0.093
Individual incentives					0.087	0.642
Other incentive scheme					−0.034	−0.369
Labor–management cooperation			−0.023	−0.299		
Quality circles					0.010	0.099
Joint consultation committee					0.012	0.129
OH&S committee			0.050	0.621	0.076	0.839
Recruitment			0.128	1.548		
Recruit through advertisements					0.062	0.521
Direct recruit					0.123	1.292
Recruit through educational institutions					0.005	0.044
Informal recruitment					0.027	0.245
Probation			0.048	0.561	0.010	0.097
Formal dispute settlement procedure			−0.108	−1.115	−0.070	−0.661
R^2	*0.587*		*0.772*		*0.797*	
F-stat	*38.193***		*6.302***		*4.863***	

[a]Standardized coefficients and *t*-values are reported.
[b]The regression models include industry and regional dummy variables as additional control variables.
*Statistically significant at the .05 level; **at the .01 level.

Table 5 presents regression results for the effects of HR practices on establishment performance. Here three models are presented. Model 1 presents results for a baseline regression in which control variables, establishment characteristics, and type of ownership variables were included. These variables accounted for 58.7% of the variance in the log value of sales. Union

lnL_i is the log of the number of employees, δ' is a vector of coefficients on HR_i which are establishment-level measures of HR practices, η' is a vector of coefficients on the control variables that capture establishment characteristics, and ε_i is an error term.

presence, the value of capital, and the number of employees were all strongly significant. Of the three ownership types included in the regression, SOEs was the only type significant, indicating that in comparison with domestic POEs, these establishments were less productive. The coefficients on both the COEs and FOEs/JVEs were not significant.

Models 2 and 3 then include HR practice variables in the regression. In Model 2, only composite forms of each variable are introduced, while Model 3 includes the 15 individual HR practice variables. In Model 2, three of the composite HR variables were significant: training, recruitment, and formal dispute settlement procedure. While the training and recruitment variables were found to have a positive effect on sales per employee, the coefficient on the formal dispute settlement procedure variable was negative. In Model 3, however, only the training variable remains significant once all variables are included. Overall, the results show limited support for the hypothesis that individual HR practices have a significant impact on performance among our sample of Chinese establishments. Our results do, however, support the proposition that investments in employee quality and skills are significantly associated with establishment level performance. This is an issue we return to in the following section.

HR Practices and Labor Costs

To what extent do the effects of HR practices on productivity translate into net positive effects on establishment performance? In order to begin to address this issue, we seek to first assess the effect of HR practices on labor costs. In a longitudinal study of U.S. manufacturing establishments, Cappelli and Neumark (2001) found evidence to support the proposition that the use of HR practices, linked to high performance work systems, were associated with a transfer of power to workers and, consequently, an increase in compensation. The effect on labor costs, they suggest, largely offsets the modest productivity gains associated with high performance work practices.

To assess this proposition we regress two measures of labor costs—the log value of the total wages costs per employee, and the log value of nonwage labor costs per employee—on the same explanatory variables used to assess the impact of HR practices on establishment performance. The results of this analysis are reported in Table 6.

Few HR variables were found to have a substantial impact on wage costs. To begin with, it is worth noting that wage costs appear to bear some relationship to firm type with COEs reporting significantly lower wage costs than POEs. Turning to the HR practice variables, the range of nonwage benefits provided to employees was associated with lower wage costs per employee, suggesting establishments are able to use such benefits as an alternative to cash wage payments. This practice has been most closely associated with SOEs and former SOEs in China and other transition economies (Naughton 2007). The relationship between wage costs and the use of individual schemes, such as bonuses, was positive and highly significant. Recruitment

Table 6. HR Practices and Labor Costs (OLS Estimates[a])

	Labor costs per employee		*Wage costs per employee*		*Nonwage costs per employee*	
Variable	*Beta*	*t*	*Beta*	*t*	*Beta*	*T*
Control variables						
Union presence	0.010	0.058	0.084	0.537	−0.088	−0.459
Industry[b]	—	—	—	—	—	—
Region[b]	—	—	—	—	—	—
Establishment characteristics						
Ln (Value of capital equip.)	0.040	0.189	0.004	0.018	0.067	0.302
Ln (No. of employees)	−0.304	−1.624	−0.725**	−3.656	−0.531**	−2.706
Ln (Establishment age)	−0.055	−0.387	−0.027	−0.196	−0.013	−0.077
Ownership						
State-owned	−0.103	−0.643	0.020	0.122	−0.080	−0.461
Collectively owned	−0.436**	−2.797	−0.280	−1.760	−0.377*	−2.169
Foreign-owned/joint venture	−0.307	−1.867	−0.054	−0.372	−0.424*	−2.385
HR variables						
Training	−0.110	−0.600	−0.126	−0.728	−0.176	−0.827
Regular workers	0.123	0.902	0.165	1.272	−0.052	−0.349
Benefits	−0.105	−0.501	−0.307	−1.708	0.389	1.781
Profit-based pay	−0.179	−1.328	−0.083	−0.714	−0.177	−1.240
Individual incentive	0.665**	3.297	0.679**	3.813	0.361	1.702
Other incentive scheme	−0.291*	−2.162	−0.002	−0.019	−0.302*	−1.983
Labor–management cooperation	0.051	0.455	−0.059	−0.488	0.102	0.865
OH&S committee	0.260*	2.159	0.017	0.148	0.255**	1.992
Recruit through advertisements	0.239	1.026	0.092	0.554	0.418	1.695
Direct recruit	−0.282	−1.965	0.009	0.062	−0.328*	−2.174
Recruit through educational institutions	0.518**	3.240	0.351**	2.606	0.341*	2.048
Informal recruitment	−0.365*	−2.211	−0.195	−1.381	−0.614**	−3.437
Probation	−0.227	−1.570	−0.091	−0.726	−0.188	−1.258
Formal dispute settlement procedure	0.167	1.020	0.061	0.407	0.069	0.410
R^2	*0.705*		*0.634*		*0.669*	
F statistic	*2.460**		*2.190**		*2.084**	

[a]All dependent variables are measured as natural logarithm of the original variable. Standardized beta coefficients are reported.
[b]The regression models include industry and regional dummy variables as additional control variables.
*Statistically significant at the .05 level; **at the .01 level.

through educational institutions was also associated with significantly higher wage costs per worker, perhaps reflecting a greater use of highly skilled workers.[9]

A number of significant effects were also evident in relation to nonwage labor costs. In particular, the presence of an occupational health and safety committee, and recruitment through public advertising, were associated with higher levels of nonwage labor costs. By contrast, a reliance on direct recruitment and informal recruitment methods were both associated with lower levels of nonwage labor costs.

[9]To assess this, we computed two separate measures of the proportion of skilled workers employed by the establishment (for all employees and for production workers only). Both of these variables were significantly correlated with the use of recruitment through education institutions ($p < 0.05$).

Table 7. Human Resource Practices and Unit Labor Costs (OLS Estimates[a])

Variable	*Beta*	*T*
Control variables		
Union presence	0.233	1.266
Industry[b]	—	—
Region[b]	—	—
Establishment characteristics		
Ln (Value of capital equipment)	0.283	1.314
Ln (No. of employees)	0.060	0.322
Ln (Establishment age)	–0.207	–1.487
Ownership		
State-owned	0.072	0.448
Collectively owned	0.365*	2.137
Foreign-owned/joint venture	0.197	1.162
HR variables		
Training	0.616**	3.053
Regular workers	–0.154	–1.065
Benefits	–0.075	–0.344
Profit-based pay	0.216	1.584
Individual incentive	–0.347	–1.692
Other incentive scheme	0.113	0.857
Labor–management cooperation	–0.089	–0.777
OH&S committee	–0.182	–1.479
Recruit through advertisements	–0.396	–1.515
Direct recruit	0.390**	2.676
Recruit through educational institutions	–0.328*	–2.019
Informal recruitment	0.448**	2.596
Probation	0.290	1.912
Formal dispute settlement procedure	–0.396*	–2.416
R^2	*0.718*	—
F statistic	*2.545***	—

[a]All dependent variables are measured as natural logarithm of the original variable. Standardized beta coefficients are reported.
[b]The regression models include industry and regional dummy variables as additional control variables.
*Statistically significant at the .05 level; **at the .01 level.

HR Practices and Unit Labor Costs

Table 7 reports OLS regression results for unit labor costs. Following Cappelli and Neumark (2001) we constructed a measure of unit labor costs as the ratio of sales per employee and total labor costs per employee.

Here our results raise some questions about the impact of HR practices on the overall efficiency of production in the Chinese context. A number of specific HR practices were associated with significant reductions in unit labor costs, notably: individual incentive schemes, recruitment through education institutions, and the presence of a formal dispute settlement procedure. The individual incentive variable is of particular interest to us because it was associated with significantly higher labor costs per employee. The

negative sign on the coefficient for this variable suggests that these additional costs were offset by improvements in production efficiency. The reduction in unit labor costs associated with relying on educational institutions to recruit labor is perhaps not surprising. As opposed to less formal forms of recruitment, this approach may provide an important device for assessing quality as well as recruiting specialist skills. The negative relationship between the adoption of a formal dispute settlement procedure and unit labor costs is also of considerable interest, particularly in the Chinese context where unions are generally viewed as dependent on management and unlikely to provide an effective voice mechanism for worker interests.

A number of HR variables were associated with higher unit labor costs. Most significantly, unit labor costs proved higher in establishments where a greater proportion of employees were engaged in training, suggesting that the return on these investments is not evident in the immediate period in which the cost is accrued. The uncertainty and often longer nature of returns on human capital investments has been highlighted as one explanation for the relatively low diffusion of high performance work practices (Erickson and Jacoby 2003). This might pose particular challenges in the Chinese context where product market and regulatory uncertainty are likely to influence the expected returns on such investments in future periods, particularly where reforms that induce higher levels of labor mobility have been introduced (Child and Tse 2001).

Recruitment through educational institutions was associated with lower unit labor costs, whereas recruitment using informal or direct methods was associated with high unit labor costs. While these methods can be used at a lower cost (as our results indicated), they may be associated with lower quality labor, or may require firms to make larger investments upfront in on-the-job training, which in turn, reduced workers' productivity.

Discussion and Conclusion

The empirical literature examining the relationship between HR practices and workplace performance has proved highly influential in the industrial relations and HR research in developed countries, with only limited attention being placed on researching the nature of these interactions in diverse institutional and cultural environments. China presents an interesting setting to test some of these well-established propositions for several reasons. First and foremost, it has, over the course of the last thirty years, become a major economic power in the global economy, accounting for a growing proportion of world production and trade. Second, over the same period it has sought to gradually establish market institutions, including a properly functioning labor market and private ownership. The impact of this transition has been of considerable interest to researchers in a number of fields. One salient reason for this interest is to understand how institutional constraints and uncertainty may influence business strategies and the diffusion of Western business and management practices among domestic firms and

joint ventures (Wei and Lau 2008). Third, it presents a contrasting cultural environment in which Western management practices may not prove as effective as in their original setting.

This study aimed to contribute to understanding how the enormous economic transformation that has been taking place in China over the last three decades has influenced the adoption of Western-style HR practices and how these practices have shaped organizational outcomes including firm performance.

Admittedly, the ILO ELFS data are unlikely to accurately reflect current HR practice—there have been further economic reforms and change over the last decade, all of which are likely to have had some consequences for the pattern of diffusion and take-up of HR in the period following the administration of the ELFS survey. Nevertheless, the data we use provide some valuable insights for a number of reasons. First, HR research in China is still, to a large extent, characterized by an absence of high-quality data (Zhang and Lamond 2009). As previously noted, ELFS surveys are one of the few exceptions and have not previously been used to explore these issues. Second, our review of the developments in China emphasized the industrial relations and labor market reforms during the 1980s and 1990s, the period immediately preceding the collection of our data. This provided a unique opportunity to systematically assess the diffusion of various practices during this time frame. It should also be emphasized that the 1990s were particularly important years for Chinese HR and industrial relations in that an extensive overhaul of labor law provisions occurred, and the liquidation of inefficient SOEs was, to a large extent, completed by the turn of the century. This, coupled with the extensive discretion granted in the early 1990s to JVEs and private domestic and foreign enterprises to establish their management practices, render the 1978 to 2000 period a salient testing ground. Third, the data provide a rare opportunity to assess the validity of the proposition that HR practices are likely to be associated with higher levels of firm performance in a transitional institutional and cultural context. Finally, we also believe that this study makes an important contribution to the more general HR-performance literature as it is one of the few examples assessing the effects of these practices on firm performance, costs, and productive efficiency (unit labor costs) simultaneously.

The ELFS data suggest that by the end of the twentieth century, many Western HR practices had diffused widely across all types of firms, although to varying degrees. Of particular interest are HR practices within SOEs. Here, the data reveal that the adoption of new HR practices was often present alongside older, more traditional, models. Some of the newer HR practices, such as profit-based pay and individual incentives, were introduced as part of the reforms made during the late 1990s that were intended to raise productivity and efficiency. Similarly, while SOEs were more likely to employ workers on regular contracts, the data reveal a substantial proportion of workers in all firm types were employed on fixed-term contracts or on a part-time basis. Yet, these new practices were more prevalent in private

sector firms or joint venture arrangements. In the case of some practices, such as quality circles and joint consultative committees, these practices were absent in the overwhelming majority of establishments irrespective of whether they were part of a domestic or international enterprise, and whether privately or publicly owned. In short, the data provide a picture of a diffuse yet uneven take-up of Western-style practices, which very often coexisted with traditional models. A typical example of this blend was the extensive use of nonwage benefits in both SOEs and JVEs.

The analysis we presented in relation to the effects of such practices on organizational outcomes seems to suggest that few individual practices have strong effects on establishment performance in the Chinese context. The most consistent result across the different models presented here is that the proportion of employees participating in either on-the-job or formal training programs was associated with higher performance, measured as sales per employee. It should be emphasized that we have not tested for possible interactions among HR practices to assess the extent of "bundling" or complementarities between practices. Nor did we assess, for example, whether such practices had more significant effects in certain industries or types of establishments.

More significantly, a number of HR practices were found to be associated with higher labor costs. Our analysis indicated that these cost effects appear to reflect the relationship between the investments in skill and labor costs. These results were broadly consistent with the findings of Cappelli and Neumark (2001) and Way (2002). Cappelli and Neumark suggest that this was largely a consequence of the fact that high-performance work practices involve a transfer of power from management to employees, which also allowed employees to capture the additional productivity associated with HR practices in the form of higher wages. Our results provide qualified support for this view. In particular, HR practices seem to influence the cost structure of production through increasing nonwage labor costs in the form of additional investments in skills in the process of establishing practices designed to facilitate employee involvement and incentive schemes intended to induce discretionary effort.

Although our results suggest the relationship between HR practices and labor costs is more complicated than what was originally proposed by Cappelli and Neumark, our overall conclusion in relation to the net efficiency effects of HR practices is somewhat similar. While investments in HR practices may have some positive effects on productivity, the net gains are at best slight, if at all positive, once cost effects are offset against productivity gains. One result that is of particular interest is the negative relationship we found between the adoption of a formal dispute procedure and unit labor cost. This would suggest that where present these processes appear to operate effectively. Although Chinese unions are generally viewed as being ineffective in representing worker interests (Friedman and Lee 2010), this result raises the possibility that unions may play some positive role in workplace dispute resolution (Ge 2007).

In interpreting our results, keep in mind the limitations of our study. The original survey was not designed to measure the effects of HR practices on firm performance. As with any data set that was created for purposes other than its current use, we were limited in the selection of our HR variables by the items that were available in the original ELFS survey. This in turn created problems as some potentially relevant variables were missing. For example, the effect of self-managed or autonomous work teams, an important variable for both the HR and "high performance work systems" literature on performance and labor costs, could not be measured. Significantly, and as we have already noted, the ELFS survey is a cross-sectional data set that has only limited value in explaining causal relationships over time.

Despite these limitations our findings have several strengths and make a significant contribution to the HR-performance debate. First, by using objective measures and by having multiple respondents answer different questions we were able to avoid common method variance problems. Second, as previously noted, the sample is considerably larger than in most other research examining HR practices in China. Third, the data set is across industries and regions thus allowing us to test the importance of variation across production contexts while controlling for several key variables.

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